APPENDIX B

WORLD WEATHER PROGRAM

The Department of Commerce (DOC) was designated by the President, following Senate Concurrent Resolution 67 (1968), to be the lead agency for coordinating United States participation in the World Weather Program (WWP). Until 1983, DOC published a separate report on WWP Plans. Beginning with the 1983 edition of the Federal Plan for Meteorological Services and Supporting Research, a section on the WWP has been included, obviating the need for a separate report. The last segment of this narrative includes information on bilateral and regional international cooperative activities which are not under the WWP.

GOALS AND ORGANIZATION

The World Weather Watch Program (WWWP) is the core of the World Meteorological Organization's (WMO) programs and continues to receive the highest budget priority. The WWWP goals are to extend the time, accuracy, range, and scope of weather prediction and to understand the physical basis of climate and climatic change. The ability of the U.S. and other nations to use their existing scientific capability to understand the climate and to increase their weather predicting skills is limited by the lack of global weather data. Available weather data are inadequately observed over a significant portion of the Earth's surface, especially over isolated areas including the oceans.

Development of the technology and the systems to obtain these observations, especially over the oceans, presents formidable problems. With the use of satellites, aircraft, ships, radar, anchored and drifting buoys, and balloons, however, an integrated system can be developed to observe and collect comprehensive data about the atmosphere over the entire globe. This system is too complex and expensive to be implemented by a single nation--a fact clearly recognized by the leaders of many nations whose international cooperation in meteorology has been a tradition for more than a century. In 1961, this continuing need for international cooperation prompted the President of the United States to propose to the United Nations (UN) the establishment of an international effort in weather prediction. The UN responded by calling upon the World Meteorological Organization (WMO) and the International Council of Scientific Unions (ICSU) to develop measures to improve weather forecasting capabilities and to advance the knowledge of the basic physical forces that determine climate.

The WMO, with 181 member states and 6 member territories, is an intergovernmental organization affiliated with the UN to facilitate international cooperation in the fields of meteorology, climate, and operational hydrology. The WMO responded to the UN request with the concept of the World Weather Watch (WWW), an operational system to bring the global atmosphere under improved surveillance and to provide for the rapid collection and exchange of weather data as well as for the dissemination of weather products from centralized processing centers.

More recently, the WMO is working towards the design and implementation of improved observations for a Global Climate Observing System (GCOS) through enhancements to the Global Observing System (GOS) and other appropriate measures. These efforts are expected to yield an enhanced GOS for both operational and research purposes and are part of the effort to strengthen the WMO's commitment to improve the understanding of climate and related environmental matters, as articulated by the Second World Climate Conference in 1990, and repeated at the UN Conference on the Environment and Development in 1992. The WMO has established the concept of a Regional Basic Climate Network (RBCN); most observing stations would function as part of both the Regional Basic Synoptic Network (RBSN) and the RBCN.

The responsibilities of U.S. Federal agencies in the WWW are as follows:

- Department of Commerce (DOC). Represents the U.S. at WMO and, through the National Oceanic and Atmospheric Administration (NOAA), provides the focal point to coordinate our Nation's efforts in these international programs, implements those service improvements in the existing international weather system for which the U.S. accepts responsibility, and develops new technology. The U.S. is one of three (Russia and Australia are the other two) World Meteorological Centers, which includes World Data Centers and the principal telecommunication gateway for the WMO's Global Telecommunication System (GTS).
- Department of State (DOS). The DOS is the principal source for U.S.-appropriated funds to the WMO. The DOS maintains relations with developing nations and, through NOAA and the WMO, assists developing nations through the Voluntary Cooperation Program (VCP) to improve their national weather services. DOS also develops appropriate multilateral and bilateral arrangements to further international participation.
- National Science Foundation (NSF). The NSF stimulates and supports basic and applied research by scientists primarily in academia on atmospheric and ocean circulation and models. It also promotes the education and training of atmospheric and ocean sci-

entists at universities.

• Department of Defense (DOD). Although the mission of DOD weather services is basically internal, the nature of the DOD's operations is global. As such, the observation, telecommunications, and data-processing programs of the DOD weather services provide significant indirect support to the WWW through DOD's interface with NOAA's National Weather Service (NWS). Information from the research and development activities of these services is exchanged routinely with other similar national agencies and is often presented at national forums. DOD also operates a polar-orbiting meteorological satellite program.

• Department of Transportation (DOT). Through the U.S. Coast Guard, DOT provides personnel to support NOAA's National Data Buoy Center (NDBC) in developing, deploying, operating, and evaluating data buoy systems. DOT's Federal Aviation Administration's terminal aerodrome meteorological observations and air traffic telecommunication network provides an important source of data to the WWW.

• National Aeronautics and Space Administration (NASA). NASA performs research, develops aerospace technology required for an effective global weather system, and provides data from R&D satellites to the WWW. NASA launches for NOAA both polar-orbiting and geostationary satellites.

• Department of the Interior (DOI). DOI's U.S. Geological Survey (USGS) is an important source of hydrologic data used in flood forecasting. The USGS, in addition to its advisory role on water issues in the WMO, will assume a greater functional role in the WMO's emerging water program.

• Department of Agriculture (USDA). USDA is a valuable resource for surface climatological meteorological data from cooperating observers. The department's World Climate Observing Board is responsible for monitoring the impact of climate and extreme weather on both national and international commercial crops. USDA is on the WMO technical commission that works on agrometeorological issues.

THE WORLD WEATHER WATCH (WWW)

The WWW is an integrated member-operated observing system linked by the GTS and it functions on three levels -- global, regional, and national. The WWW is divided into three essential elements that are closely linked and interdependent - the Global Data Processing System (GDPS), Global Telecommunication System (GTS), and the Global Observing System (GOS).

These elements are coordinated and closely integrated through three WWW support functions:

• The data management function coordinates, monitors, and manages the flow of data and products within the WWW system to assure their quality and timely delivery. It also includes the definition and use of code forms for data exchange.

• The systems support activity provides guidance, technical and scientific information, and training to those involved in the planning, development, and operation of WWW components.

• The implementation and coordination function assures the timely completion of the WWW implementation and effective support and maintenance of the WWW system.

GLOBAL OBSERVING SYSTEM (GOS)

The GOS is a coordinated observing system, employing standardized techniques for making meteorological and marine surface observations on a worldwide scale. It is a composite system, containing surface-based (national networks), airborne (civil aviation), and space-based (satellite) subsystems. The main elements of the network and airborne subsystems include:

• The Regional Basic Synoptic Network (RBSN), staffed and automated, for both surface and upper-air observations.

• Fixed observing stations at sea, composed of fixed and anchored platform stations, and island and coastal stations.

• Mobile sea stations, including moving ships.

• Moored and drifting buoys.

• Aircraft meteorological stations, including automated aircraft reporting systems.

ENVIRONMENTAL SATELLITES

NOAA's National Environmental Satellite, Data, and Information Service (NESDIS), manages the U.S. civil operational environmental satellite systems. NESDIS procures, launches, and operates two types of satellites to provide worldwide environmental data and information products and services to Federal agencies, state and local governments, and private users. They are the Polar-orbiting Operational Environmental Satellite (POES) and Geostationary Operational Environmental Satellites (GOES).

Currently NESDIS is operating six polar orbiters. The newest series of POES satellites began with the launch of NOAA-15 in May 1998, followed by NOAA-16 on September 21, 2000, NOAA-17 on June 24, 2002, and finally NOAA-18 on May 20, 2005. NOAA-17 and NOAA-18 are classified as the primary operational satellites. NOAA-12, NOAA-14, NOAA-15, and NOAA-16 satellites continue to transmit data as stand-by satellites. NOAA-17 serves as the primary morning satellite and NOAA-18 the primary afternoon satellite.

The POES satellites are circling the Earth in an almost north-south orbit, passing close to both poles. These orbits have an altitude between 830 km (morning orbit) and 870 km (afternoon orbit) and are sun synchronous. One

satellite crosses the equator in descending orbit at 10:00 AM local time, the other at 2:00 PM local time. Operating as a pair, these satellites ensure that data for any region of the Earth are no more than six hours old. Each satellite orbits the Earth 14 times per day, collecting global data for atmospheric and surface measurements in support of short-term weather forecasting and long-term global climate change research. NOAA also manages the command, control, and communications function of the DOD's Defense Meteorological Satellite Program (DMSP) constellations.

An agreement with the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) gives EUMETSAT responsibility for the morning segment of NOAA's polar environmental mission (circa 9:30 AM LST), with U.S.-provided payload instruments and sensors, beginning in 2006. Upon inception of this operational arrangement, NOAA will operate the afternoon mission while EUMETSAT will support the morning mission. Under this joint mission, upgraded instruments will be flown that will result in improvements for the user community.

NESDIS is also responsible for operating two geostationary satellites, referred to as GOES East and GOES West, plus an on-orbit spare satellite. Each satellite views nearly one third of the Earth's surface. The GOES-12 (East) satellite is positioned at 75 degrees W longitude at the equator and monitors North and South America and most of the Atlantic Ocean. GOES-11 (West) is positioned at 135 degrees W longitude at the equator and monitors North America and the Pacific Ocean basin. These two satellites operate together to provide continuous monitoring necessary for effective and extensive weather forecasting, prediction, and environmental monitoring. GOES East and West are in geosynchronous orbits, which means they orbit the equatorial plane of the Earth at a speed matching the Earth's rotation. This allows them to continuously view one part of the Earth's surface. The geosynchronous orbit is about 35,800 km (22,300 miles) above the Earth's equator. On May 24, 2006, GOES-13 was launched. This spacecraft is the first spacecraft of the GOES N-P series. This new series improves NOAA's coverage during spacecraft eclipse season. After checkout of the satellite, GOES-13 will be available as a replacement for GOES East or West in the event of a failure. With the move of GOES-11 to GOES West (replacing GOES-10), GOES-10 will be repositioned to support South America as part of the Global Earth Observation System of Systems (GEOSS).

AIRBORNE OBSERVATIONS

The WWW has pursued a class of automated airborne reporting systems such as the Automated Meteorological Data and Reporting (AMDAR) systems. Over 3000 aircraft now provide reports of pressure, winds, and temperature during flight. The amount of data from aircraft has increased dramatically during recent years -- from 78,000 reports in 2000 to 190,000 reports in 2006. These systems are making a major contribution to the upper-air component of the GOS in regions where there is little or no radiosonde data.

The U.S. AMDAR program began in the early 1980's as a cooperative effort among ARINC (Aeronautical Radio, Inc.), the NWS, and the FAA. Over 150,000 reports of wind and temperature are sent every day in the Binary Universal Form for Representation of Meteorological Data (BUFR) code. These reports are provided by seven airlines: American, Delta, Federal Express (FedEx), Northwest, Southwest, United, and United Parcel Service (UPS). Global cooperation on AMDAR is facilitated by the WMO AMDAR Panel established in 1998 by a number of WMO members operating or intending to operate AMDAR programs. Australia, Canada, China, EUMETNET/E-AMDAR, Japan, New Zealand, Republic of Korea, Russia, Saudi Arabia, South Africa, and the U.S. have AMDAR programs. A number of new countries have directly indicated interest in the past year in developing AMDAR including Slovenia, the Czech Republic, Malaysia, Kenya, and Mauritius, who have also appointed focal points, and Singapore has recommenced exploring possibilities of using targeted data. Specific information and guidance has been provided to all countries. Additionally, Bulgaria and Croatia have begun exploring the potential of using AMDAR in their own national programs.

In addition to wind and temperature data collection, the U.S. program is expanding the operational parameters collected to also include water vapor and turbulence. Water vapor observations from over 75 aircraft, from two different sensors have been routinely available for assessment since early 2005. A new turbulence algorithm, developed by the National Center for Atmospheric Research (NCAR) derives an objective, aircraft-independent measure of turbulence (eddy dissipation rate (EDR)) from aircraft vertical acceleration. The EDR algorithm is currently installed on 400 United Airlines aircraft, is available through the AirDat TAMDAR sensor, and will be added to several additional Southwest Airlines aircraft in the next year as well. EDR reports are being experimentally ingested into the FAA Graphic Turbulence Guidance (GTG) and as an initialization parameter.

SURFACE-BASED OBSERVATIONS

GOS employs both marine and land surface-based observing systems. Approximately 11,000 stations on land take observations at least once every three hours and often hourly of thermodynamic and wind-field parameters of

the atmosphere. About 4,000 of the world's surface stations comprise the RBSN. Data from these stations are exchanged globally in real time. A subset of these surface stations are used in the Global Climate Observing System (GCOS) Surface Network (GSN). The U.S. operates 87 surface stations as part of the GCOS network. Many countries, including the U.S., have available additional surface data from specialized mesoscale networks, such as Oklahoma's Mesonet, used for research, water management, and transportation needs. The U.S. operates about 73 surface stations on the Antarctic continent. Twenty are U.S. government sponsored of which only 4 report regular observations. The other 53 sites are sponsored through university programs.

The lower atmosphere is vertically profiled using a land-based global array of about 900 upper-air stations which deploy at least once per day a balloon-borne radiosonde capable of providing in-situ measurements of basic state parameters. Approximately 15 specially outfitted commercial ships provide upper-air observations over sparsely instrumented oceanic regions. The NWS operates 92 upper-air stations and supports 15 additional sites in the Caribbean and Pacific. For all U.S. activities (including DOD and other agencies), we have reported to WMO a total of 132 sites. The U.S. has also implemented experimental or quasi-operational networks or single sites of ground-based Doppler radars called wind profilers to provide nearly continuous wind soundings. A network of 32 tropospheric wind profilers is being operated quasi-operationally at 404 MHZ, primarily in the central part of the U.S.

MARINE OBSERVATIONS

Over the oceanic regions, the global observing system relies on ships, moored and drifting buoys, profiling floats, and stationary platforms, in addition to derived data from satellite observations. The Volunteer Observing Ship fleet is comprised of some 5,000 commercial ships. About 900 ships report marine meteorology observations at least 25 times per month. A subset of the volunteer ships routinely deploys expendable bathythermograph probes to measure upper-ocean temperatures to a depth of 750 meters; about 20,000 probes are deployed annually. An array of 1250 surface drifting buoys provides 30,000 sea surface temperature and surface air pressure reports per day. Surface currents are derived by tracking the drifter movements. A network of 375 moored buoys provides about 9000 reports of surface marine observations per day. The moored buoys are located offshore of several maritime nations and also span the tropical Pacific and Atlantic Oceans. Implementation of a tropical Indian Ocean moored array is now underway. The Indian Ocean array is planned to be completed by about 2012. Argo--a global array of profiling floats--provides profiles of ocean temperature and salinity to depths of 2000 meters. Each float reports via satellite once every 10 days. As of October 2006, about 2500 Argo floats were in operation around the globe and it is expected that the array will reach its design goal of 3000 floats by early 2007.

GLOBAL CLIMATE OBSERVING SYSTEM (GCOS)

The U.S. has been involved with GCOS since its inception. NOAA's National Climatic Data Center (NCDC) in Asheville, North Carolina, supports a number of GCOS data management activities and hosts the U.S. GCOS Program Office based in Silver Spring, Maryland [see http://www.ncdc.noaa.gov/oa/usgcos/index.htm]. This support fits in with a proactive process approach for GCOS implementation planning with the goal of obtaining a sustainable and robust GCOS observing network for international atmospheric, oceanographic, and terrestrial climate observing. The U.S. national program has taken a three-tiered approach to fostering the GCOS program. This approach involves providing support:

- Internationally to improve and enhance monitoring stations in developing nations that require assistance as identified by the international GCOS Atmospheric Observations Panel for Climate.
- Regionally for workshops and projects such as those in the Pacific Ocean region for ensuring a robust and sustainable GCOS observing program; and
- On a bilateral basis with nations that have entered into agreements with the U.S. on improving climate observing activities.

Meteorological surface-based networks, utilized for climate purposes, make observations of important climate factors; atmospheric profiles; and pollutant emissions, aerosols, and ozone. These surface-based networks are intended to provide the basic observational set needed to define the status and trends in climate of the world, and also to calibrate and validate satellite-based observations. NOAA's U.S. GCOS Program Office has committed to leading the way, in partnership with the GCOS Secretariat at the WMO, to facilitate improvements in the management and operation of GCOS and GCOS-related networks.

In general, GCOS performance measures used by NOAA in managing its international support are intended to gradually increase the quality and quantity of data from the GCOS Surface Network (GSN) and GCOS Upper-Air Network (GUAN) over the next several years. The performance measures focus on observing system improvements in developing nations in Africa, South America, and the Pacific Islands. The support for developing nations has primarily been for retrofitting surface and upper-air observing stations that have up-to-now been

silent, but yet are key to global climate monitoring activities. Countries that have received new equipment and expendables over the past three years include: Argentina, Armenia, Congo, Cook Islands, Costa Rica, Ecuador, Ivory Coast, Kenya, Maldives, Namibia, the Philippines, and Zimbabwe. The U.S. State Department has been instrumental in aiding in the establishment of regional GCOS maintenance facilities which have been established in the Pacific and the Caribbean. Another one is being planned for Southern and Eastern Africa in order to further the sustainability of the GCOS network in the developing nations of that region.

Additionally, for the GSN, the performance measure is the percent explained variance in mean annual temperature in the developing world. The long-term goal is 90 percent explained variance with a network of 75 stations. This will be accomplished by deploying new observing stations that meet the same stringent requirements as those in the U.S. Climate Reference Network. For the GUAN, the long-term objective is to increase the percent of GUAN sites in the developing world that meet GCOS reporting requirements (i.e., two soundings per day for 25 days in the month, each sounding with temperature/wind data up to 5 hPa and humidity data up to the tropopause). This will be accomplished by modernizing 75 existing GUAN stations. The long-term goal is to have 90 percent of the GUAN stations in the developing world meeting GCOS requirements. The U.S. GCOS Program, in conjunction with the GCOS Secretariat and other elements in NOAA, is working towards the development of a high-quality GCOS Atmospheric Reference Observations Network (GARON). Finally, support for the chemical constituent portion of GCOS, the Global Atmosphere Watch (GAW) program is part of the integrated GCOS support provided.

GLOBAL DATA PROCESSING AND FORECASTING SYSTEM (GDPFS)

The purpose of GDPFS is to make available all processed information required for both real-time and non-real-time applications. GDPFS provides products and processed information, based on recent advances in atmospheric science, using powerful numerical computer methods. Members have real-time, unrestricted access through the GTS to GDPFS products which allow all countries to benefit from their participation in the WWW.

The GDPFS is organized as a three-level system. It consists of World Meteorological Centers (WMC), Regional/Specialized Meteorological Centers (RSMC), and National Meteorological Centers (NMC). Products of RSMCs can be used by members at the national level for further processing or interpretation to provide assistance or service to users. NMCs carry out GDPFS functions at the national level.

In general, real-time functions of the system involve preprocessing of data to include real-time quality control, analysis, and prognosis, and the derivation of appropriate meteorological parameters. The non-real-time functions include data collection and archival, and additional quality control, storage, and retrieval, to include cataloging observational data and processed information for operational and special applications and for research. WMCs are located in Melbourne, Moscow, and Washington, and they provide guidance products used for general short-, medium-, and long-range weather forecasts on a global scale. Melbourne specializes in forecast products for the Southern Hemisphere.

RSMCs with geographical specialization include Algiers, Beijing, Bracknell, Brazilia, Buenos Aires, Cairo, Dakar, Darwin, Jeddah, Khabarovsk, Melbourne, Miami, Montreal, Moscow, Nairobi, New Delhi, Novosibirsk, Offenbach, Pretoria, Rome, Tashkent, Tokyo, Tunic/Casablanca, Washington and Wellington. RSMCs with specialization for tropical cyclone forecasting are: Miami - Hurricane Center, Nadi - Tropical Cyclone Center, New Delhi - Tropical Cyclone Center, Saint Denis, La ReUnion - Tropical Cyclone Center, Tokyo - western Pacific Typhoon Center, and Honolulu - central Pacific Typhoon Center. The European Center for Medium-Range Weather Forecasts (ECMWF) is an RSMC operated by the European community out of Bracknell, UK. The regional centers at Bracknell, Honolulu, Miami, Montreal, New Delhi, and Tokyo also have dual geographical and activity specialization responsibilities. These centers provide regional products used for short- and medium-range forecasting of small, mesoscale, and large-scale meteorological systems by WMCs. The RSMCs located at Beijing, Bracknell, Melbourne, Montreal, Obninsk, Tokyo, Toulouse, and Washington provide, upon request, atmosphere aerosol and chemical transport model products for environmental emergency responses.

Other WMO-designated specialized centers serve emerging development needs: African Center of Meteorological Applications for Development (ACMAD) - Niamey, Niger; ASEAN Specialized Meteorological Center (ASMC) - Singapore; Drought Monitoring Centers (DMC) - Nairobi, Kenya, and Harare, Zimbabwe; INPE - Sao Paulo, Brazil; National Center for Medium Range Weather Forecasting - New Delhi.

INTERNATIONAL SATELLITE COMMUNICATION SYSTEM (ISCS)

The World Area Forecast System (WAFS) has two centers (Washington and London) which are designated by the International Civil Aviation Organization (ICAO) as World Area Forecast Centers (WAFC). The dissemination of aeronautical information via global satellite broadcast began in 1995, through the International Satellite

Communication System (ISCS). The U.S. provides the links to two of the three satellites specified in the system. The WAFS issue upper-level wind and temperature forecasts with global coverage and forecasts of weather elements defined by ICAO as significant.

The U.S. continues to support ten ISCS/WAFS workstations of the Regional Meteorological Telecommunication Network in the Caribbean and also supports the Caribbean weather website (www.caribweather.net).

GLOBAL TELECOMMUNICATION SYSTEM

The GTS provides communication services for the collection, exchange, and distribution of observational data and processed information among the WMCs, RSMCs, and NMCs of the WWW to meet the member needs for real-time or quasi-real-time exchange of information for both operational and research purposes. The GTS also supports other WMO programs, joint programs with other international organizations, and environmental programs as decided by the WMO and is organized on three levels:

- The Main Telecommunication Network (MTN).
- The Regional Meteorological Telecommunication Networks (RMTN).
- The National Meteorological Telecommunication Networks (NMTN).

The GTS is supported by the telecommunications functions of the WMCs, Regional Telecommunications Hubs (RTH), RSMCs, and NMCs. The MTN links the WMCs at Melbourne, Moscow, and Washington with the RTHs at Algiers; Beijing; Bracknell; Brasilia; Buenos Aires; Cairo; Dakar; Jeddah; Maracay, Venezuela; Nairobi; New Delhi; Norrköping, Sweden; Offenbach; Prague; Rome; Sofia; Tokyo; Toulouse; and Wellington. It ensures the rapid and reliable exchange of observational data and processed information required by the members.

The RMTNs consist of an integrated system of links which interconnects RTHs, NMCs, and RSMCs to WMCs. The RMTNs provide for the collection of observational data and the selective distribution of meteorological information to member nations.

In summary, the GTS enables the NMCs to receive and distribute observational data and meteorological information to meet the requirements of members. Ongoing WWW activities include:

- GTS network redesign, referred to as the WMO Information System (WIS), to take into consideration new technical opportunities, such as Internet-like services.
- Improvement of the capacity of MTN links and inclusion of graphics (e.g., Washington-Brasilia, Washington-Buenos Aires, Washington-Tokyo).
- Upgrade of the GTS in the Indian Ocean Basin to facilitate real-time movement of tsunami and natural hazard warnings.
- Continued implementation of satellite-serviced data collection platforms to enhance the collection of meteorological data from upper-air and surface-observing sites.
- Continued implementation of satellite direct-readout stations that are compatible with polar-orbiting satellites and the weather facsimile (WEFAX) component of the geostationary satellites. Planning is underway for eventual conversion of WEFAX to Low-Rate Information Transmission (LRIT) and Automatic Picture Transmission (APT) to Low Rate Picture Transmission (LRPT) formats with the advent of a new generation of satellites.

VOLUNTARY COOPERATION PROGRAM (VCP)

The WMO Voluntary Cooperation Program (VCP) is a technical cooperation program, managed by the WMO, focused on meeting the needs of member countries to implement WMO scientific and technical programs. The VCP endeavors to complement activities being implemented through national meteorological services and WMO trust-fund arrangements, and through other UN organizations such as United Nations Development Programme (UNDP).

The U.S. participates in the WMO VCP with coordination assistance provided by NOAA's National Weather Service. In 2005, the U.S. contributed nearly $2 million dollars to the VCP to support projects and training which enhance the sciences of meteorology and hydrology. The focus this year was to support the theme "Technical Cooperation for Sustainable Development."

U.S. VCP funds provided assistance to developing countries to help develop and improve their WMO telecommunications infrastructure for tsunami and natural disaster warning networks. Through the NWS' National Centers for Environmental Prediction (NCEP), the U.S. VCP supports weather forecast training for the Americas and the Caribbean countries and climate prediction training for Africa. Additionally, in the Pacific, NCEP provides forecaster training for islanders, and new funding is now dedicated to working with regional associations to enhance communications by upgrading of Low-Rate Users Stations in the Island Developing States to provide access to meteorological satellite images in LRIT format for 17 Pacific Island countries and territories.

The U.S. VCP will also support training programs in the Americas to advance satellite data applications and build capacity as part of the Earth Observations Partnerships of the Americas (EOPA) initiative and support the upcoming move of the GOES-10 satellite to provide more regional coverage.